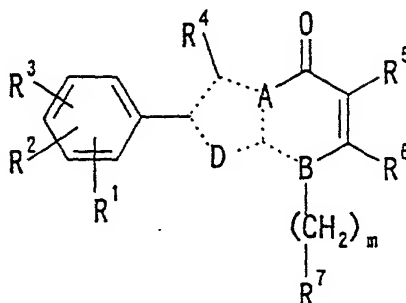


## CLAIMS

1. A compound of the formula (I):



- wherein one of A and D represents a nitrogen atom and the  
 5 other represents a carbon atom, or both represent a  
 nitrogen atom;  
 B represents a nitrogen atom or a carbon atom;  
 m represents an integer from 0 to 3;  
 R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> each represents (i) hydrogen or (ii) a  
 10 group bound via a carbon atom, a nitrogen atom, an oxygen  
 atom or a sulfur atom;  
 R<sup>4</sup> represents a group bound via a carbon atom;  
 R<sup>5</sup> represents (i) hydrogen, (ii) halogen or (iii) a group  
 bound via a carbon atom or an oxygen atom;  
 15 R<sup>6</sup> represents hydrogen or a group bound via a carbon  
 atom;  
 R<sup>7</sup> represents a homocyclic group which may be substituted  
 or a heterocyclic group which may be substituted; and  
 each dotted line represents a single bond or a double  
 20 bond, or a salt thereof.

2. A compound of claim 1 or a salt thereof,  
 wherein  
 R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> each is (1) hydrogen,  
 (2) a hydrocarbon group which may be substituted,  
 25 (3) an acyl group which may be substituted,

(4) a heterocyclic group having a bond in a carbon atom thereof which may be substituted,

(5) a group of the formula:  $-\text{COOR}^{21}$  wherein  $\text{R}^{21}$  is hydrogen, a hydrocarbon group which may be substituted or a heterocyclic group which may be substituted,

(6) a group of the formula:  $-\text{CO-NR}^{15}\text{R}^{16}$  wherein  $\text{R}^{15}$  is hydrogen, a hydrocarbon group which may be substituted or a  $\text{C}_{1-10}$  alkoxy group; and  $\text{R}^{16}$  is hydrogen or a hydrocarbon group which may be substituted; or  $\text{R}^{15}$  and  $\text{R}^{16}$  form, taken together with the adjacent nitrogen atom, a cyclic amino group which may be substituted,

(7) a cyano group,

(8) a nitro group,

(9) a group of the formula:  $-\text{NR}^8\text{R}^9$  wherein  $\text{R}^8$  is (i) hydrogen, (ii) a hydrocarbon group which may be substituted, (iii) an acyl group which may be substituted, (iv) a group of the formula:  $-\text{O-R}^{13}$  wherein  $\text{R}^{13}$  is hydrogen, a  $\text{C}_{1-10}$  hydrocarbon group which may be substituted, a  $\text{C}_{1-20}$  acyl group which may be substituted, a  $\text{C}_{1-20}$

alkylsulfonyl group which may be substituted, a  $\text{C}_{6-14}$  arylsulfonyl group which may be substituted

or a heterocyclic group which may be substituted,

(v) a heterocyclic group which may be substituted or (vi) a group of the formula:  $-\text{S(O)}_t-\text{R}^{12}$

wherein  $t$  is an integer from 0 to 2, and  $\text{R}^{12}$  is hydrogen or a  $\text{C}_{1-10}$  hydrocarbon group which may

be substituted;

R<sup>9</sup> is hydrogen, a hydrocarbon group which may be substituted or an acyl group which may be substituted; or

R<sup>8</sup> and R<sup>9</sup> form, taken together with the adjacent  
5 nitrogen atom, a cyclic amino group which may be substituted,

(10) a group of the formula: -O-R<sup>13</sup> wherein R<sup>13</sup> is as defined above, or

(11) a group of the formula: -S(O)t-R<sup>14</sup> wherein t  
10 is an integer from 0 to 2, and R<sup>14</sup> is hydrogen, a hydrocarbon group which may be substituted or a heterocyclic group which may be substituted;  
R<sup>4</sup> is (1) a hydrocarbon group which may be substituted,

15 (2) an acyl group which may be substituted,

(3) a heterocyclic group having a bond in a carbon atom thereof which may be substituted,

(4) a group of the formula: -COOR<sup>21</sup> wherein R<sup>21</sup> is as defined above,

20 (5) a group of the formula: -CO-NR<sup>15</sup>R<sup>16</sup> wherein each symbol is as defined above, or

(6) a cyano group;

R<sup>5</sup> is (1) hydrogen,

(2) halogen,

25 (3) a hydrocarbon group which may be substituted,

(4) an acyl group which may be substituted,

(5) a heterocyclic group having a bond in a carbon atom thereof which may be substituted,

(6) a group of the formula: -COOR<sup>21</sup> wherein R<sup>21</sup>  
30 is as defined above,

- (7) a group of the formula:  $-\text{CO}-\text{NR}^{15}\text{R}^{16}$  wherein each symbol is as defined above,
- (8) a cyano group, or
- (9) a group of the formula:  $-\text{O}-\text{R}^{13}$  wherein  $\text{R}^{13}$  is as defined above;
- 5  $\text{R}^6$  is (1) hydrogen,
- (2) a hydrocarbon group which may be substituted,
- (3) an acyl group which may be substituted,
- (4) a heterocyclic group having a bond in a
- 10 carbon atom thereof which may be substituted,
- (5) a group of the formula:  $-\text{COOR}^{21}$  wherein  $\text{R}^{21}$  is as defined above,
- (6) a group of the formula:  $-\text{CO}-\text{NR}^{15}\text{R}^{16}$  wherein each symbol is as defined above, or
- 15 (7) a cyano group;
- $\text{R}^7$  is (i) a  $\text{C}_{6-10}$  aryl or  $\text{C}_{3-7}$  cycloalkyl group, each of which may be substituted by 1 to 6 substituents selected from the group consisting of (1)  $\text{C}_{1-15}$  alkyl which may be substituted by 1
- 20 to 3 halogen, (2)  $\text{C}_{3-10}$  cycloalkyl, (3)  $\text{C}_{2-10}$  alkenyl, (4)  $\text{C}_{2-10}$  alkynyl, (5)  $\text{C}_{3-10}$  cycloalkenyl, (6)  $\text{C}_{6-10}$  aryl, (7)  $\text{C}_{7-20}$  aralkyl, (8) nitro, (9) hydroxy, (10) mercapto, (11) oxo, (12) thioxo, (13) cyano, (14) carbamoyl, (15)
- 25 carboxyl, (16)  $\text{C}_{1-6}$  alkoxy-carbonyl, (17) sulfo, (18) halogen, (19)  $\text{C}_{1-6}$  alkoxy, (20)  $\text{C}_{6-10}$  aryloxy, (21)  $\text{C}_{1-6}$  alkanoyloxy, (22)  $\text{C}_{1-6}$  alkylthio, (23)  $\text{C}_{6-10}$  arylthio, (24)  $\text{C}_{1-6}$  alkylsulfinyl, (25)  $\text{C}_{6-10}$  arylsulfinyl, (26)  $\text{C}_{1-6}$
- 30 alkylsulfonyl, (27)  $\text{C}_{6-10}$  arylsulfonyl, (28)

amino, (29) C<sub>1-6</sub> alkanoylamino, (30) mono- or di-C<sub>1-4</sub> alkylamino, (31) C<sub>3-8</sub> cycloalkylamino, (32) C<sub>6-10</sub> arylamino, (33) C<sub>1-6</sub> alkanoyl, (34) C<sub>6-10</sub> aryl-carbonyl and (35) 5- to 6-membered

5 heterocyclic group, or  
(ii) a heterocyclic group which may be substituted,

in which "hydrocarbon group" is a C<sub>1-20</sub> hydrocarbon group selected from C<sub>1-15</sub> alkyl, C<sub>3-10</sub> cycloalkyl, C<sub>2-10</sub> alkenyl, C<sub>2-10</sub> alkynyl, C<sub>3-10</sub> cycloalkenyl, C<sub>6-14</sub> aryl and C<sub>7-20</sub> aralkyl;

"C<sub>1-10</sub> hydrocarbon group" is a C<sub>1-10</sub> alkyl, C<sub>3-10</sub> cycloalkyl, C<sub>2-10</sub> alkenyl, C<sub>2-10</sub> alkynyl, C<sub>3-10</sub> cycloalkenyl, C<sub>6-10</sub> aryl or phenyl-C<sub>1-4</sub> alkyl group;

15 "acyl group" and "C<sub>1-20</sub> acyl group" each is formyl, C<sub>1-6</sub> alkyl-carbonyl, C<sub>1-6</sub> alkoxy-carbonyl, C<sub>6-14</sub> aryl-carbonyl, C<sub>6-14</sub> aryloxy-carbonyl, C<sub>6-14</sub> aryl-C<sub>1-6</sub> alkyl-carbonyl, C<sub>6-14</sub> aryl-C<sub>1-6</sub> alkoxy-carbonyl, C<sub>2-4</sub> alkenyl-carbonyl, C<sub>3-6</sub> cycloalkyl-carbonyl or tricyclic bridged C<sub>9-10</sub> hydrocarbon-carbonyl;

"heterocyclic group" is (1) a 5- to 8-membered heterocyclic group containing 1 to 4  
25 hetero atoms selected from oxygen atoms, sulfur atoms, nitrogen atoms in addition to carbon atoms, (2) a bi- or tri-cyclic condensed heterocyclic group resulting from condensation of 2 or 3 of the above (1) heterocyclic group, whether  
30 identical or not, or (3) a bi- or tri-cyclic

condensed heterocyclic group resulting from condensation of the above (1) heterocyclic group and 1 or 2 benzene rings;

"cyclic amino group" is a 5- to 7-membered cyclic amino group optionally containing 1 to 3 hetero atoms selected from oxygen atoms, sulfur atoms, nitrogen atoms in addition to carbon atoms and a nitrogen atom;

"substituent(s)" for the "hydrocarbon group which may be substituted", the "C<sub>1-10</sub> hydrocarbon group which may be substituted", the "acyl group which may be substituted", "C<sub>1-20</sub> acyl group which may be substituted", the "C<sub>1-20</sub> alkylsulfonyl group which may be substituted" or the "C<sub>6-14</sub> arylsulfonyl group which may be substituted" is selected from 1 to 6 of (1) halogen, (2) nitro, (3) nitroso, (4) cyano, (5)(i) C<sub>1-6</sub> alkyl which may be substituted by 1 to 3 substituents selected from the group consisting of hydroxy, C<sub>1-6</sub> alkoxy, C<sub>1-3</sub> alkoxy-C<sub>1-3</sub> alkoxy, C<sub>1-3</sub> alkylthio, hydroxy-C<sub>1-3</sub> alkoxy, C<sub>1-6</sub> alkyl-carbonyl, carboxy, carbamoyl, C<sub>1-6</sub> alkyl-carbamoyl, 5- to 8-membered heterocyclic group and halogen, (ii) C<sub>1-4</sub> alkanoyl or C<sub>2-4</sub> alkenoyl, (iii) C<sub>6-14</sub> aryl-C<sub>1-6</sub> alkyl which may be substituted by 1 to 3 substituents selected from the group consisting of halogen, C<sub>1-3</sub> alkoxy and C<sub>1-4</sub> alkyl, (iv) C<sub>6-14</sub> aryl which may be substituted by 1 to 3 halogen, (v) C<sub>2-6</sub> alkenyl, (vi) C<sub>3-7</sub> cycloalkyl, (vii) C<sub>1-3</sub> alkoxy-carbonyl,

(viii) mono- or di-C<sub>1-6</sub> alkyl amino, (ix) C<sub>2-6</sub> alkenyl amino, (x) C<sub>1-3</sub> alkoxy-carbonyl, (xi) formyl or C<sub>1-6</sub> alkyl-carbonyl, or (xii) hydroxy which may be substituted by C<sub>3-6</sub> cycloalkyloxy-carbonyl, (6) a group of the formula: -S(O)<sub>t</sub>-R<sup>17</sup> wherein t is an integer from 0 to 2, and R<sup>17</sup> is (i) hydrogen or (ii) a C<sub>1-6</sub> alkyl, C<sub>6-14</sub> aryl or C<sub>7-20</sub> aralkyl group which may be substituted by 1 to 3 substituents selected from the group consisting of halogen, nitro, cyano, hydroxy, oxo, thioxo, carboxy, cyano-C<sub>6-14</sub> aryl and halogeno-C<sub>6-14</sub> aryl, (7) a group of the formula: -NR<sup>18</sup>R<sup>19</sup> wherein R<sup>18</sup> and R<sup>19</sup> each is hydrogen, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylamino-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy, C<sub>2-6</sub> alkenyl, C<sub>3-7</sub> cycloalkyl, phenyl, phenyl-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkanoyl, C<sub>3-6</sub> alkenoyl, C<sub>4-7</sub> cycloalkyl-carbonyl, phenyl-C<sub>1-6</sub> alkyl-carbonyl, C<sub>1-6</sub> alkoxy-carbonyl, phenyl-C<sub>1-6</sub> alkoxy-carbonyl or 5- to 8-membered heterocyclic group, (8) a group of the formula: -CO-R<sup>20</sup> wherein R<sup>20</sup> is (i) hydrogen, (ii) hydroxy, (iii) C<sub>1-10</sub> alkyl or (iv) C<sub>1-6</sub> alkoxy which may be substituted by C<sub>6-14</sub> aryl which may be substituted by 1 to 3 substituents selected from the group consisting of halogen and nitro, (v) C<sub>3-6</sub> cycloalkyl, (vi) C<sub>6-14</sub> aryl, (vii) C<sub>6-14</sub> aryloxy, (viii) C<sub>7-20</sub> aralkyl, (ix) a group of the formula: -NR<sup>10</sup>R<sup>11</sup> wherein R<sup>10</sup> is hydrogen, a C<sub>1-10</sub> hydrocarbon group which may be substituted, a C<sub>1-20</sub> acyl group which may be substituted, a group of the

formula:  $-O-R^{13}$  wherein  $R^{13}$  is as defined above,  
a heterocyclic group which may be substituted or  
a group of the formula:  $-S(O)t-R^{12}$  wherein each  
symbol is as defined above; and  $R^{11}$  is hydrogen  
5 or a  $C_{1-10}$  hydrocarbon group; or  $R^{10}$  and  $R^{11}$  form,  
taken together with the adjacent nitrogen atom, a  
cyclic amino group which may be substituted, or  
(x) 5- to 8-membered heterocyclic group, (9) 5-  
to 8-membered heterocyclic group which may be  
10 substituted by 1 to 3 substituents selected from  
the group consisting of hydroxy, amino, mono- or  
di- $C_{1-4}$  alkylamino,  $C_{1-4}$  alkoxy, halogen, nitro  
and  $C_{1-6}$  alkyl, (10) sulfo, (11)  $C_{6-14}$  aryl which  
may be substituted by 1 to 3 substituents  
15 selected from the group consisting of hydroxy,  
amino, mono- or di- $C_{1-4}$  alkylamino,  $C_{1-4}$  alkoxy,  
halogen, nitro and  $C_{1-6}$  alkyl, (12)  $C_{3-7}$   
cycloalkyl which may be substituted by 1 to 3  
substituents selected from the group consisting  
20 of hydroxy, amino, mono- or di- $C_{1-4}$  alkylamino,  
 $C_{1-4}$  alkoxy, halogen, nitro and  $C_{1-6}$  alkyl, (13)  
 $C_{1-6}$  alkylenedioxy, (14) oxo, (15) thioxo, (16)  
 $C_{2-4}$  alkynyl which may be substituted by 1 to 3  
substituents selected from the group consisting  
25 of hydroxy, amino, mono- or di- $C_{1-4}$  alkylamino,  
 $C_{1-4}$  alkoxy, halogen, nitro and  $C_{1-6}$  alkyl, (17)  
 $C_{3-10}$  cycloalkyl which may be substituted by 1 to  
3 substituents selected from the group consisting  
of hydroxy, amino, mono- or di- $C_{1-4}$  alkylamino,  
30  $C_{1-4}$  alkoxy, halogen, nitro and  $C_{1-6}$  alkyl, (18)



- C<sub>2-10</sub> alkenyl which may be substituted by 1 to 3 substituents selected from the group consisting of hydroxy, amino, mono- or di-C<sub>1-4</sub> alkylamino, C<sub>1-4</sub> alkoxy, halogen, nitro and C<sub>1-6</sub> alkyl, (19)
- 5 C<sub>7-20</sub> aralkyl which may be substituted by 1 to 3 substituents selected from the group consisting of hydroxy, amino, mono- or di-C<sub>1-4</sub> alkylamino, C<sub>1-4</sub> alkoxy, halogen, nitro and C<sub>1-6</sub> alkyl, (20) amidino and (21) azido;
- 10 "substituent(s)" for the "heterocyclic group which may be substituted" or the "heterocyclic group having a bond in a carbon atom thereof which may be substituted" is selected from 1 to 6 of (1) C<sub>1-6</sub> alkyl, (2) C<sub>2-6</sub> alkenyl, (3) C<sub>2-6</sub>
- 15 alkynyl, (4) C<sub>3-6</sub> cycloalkyl, (5) C<sub>5-7</sub> cycloalkenyl, (6) C<sub>6-10</sub> aryl-C<sub>1-5</sub> alkyl, (7) C<sub>6-14</sub> aryl, (8) C<sub>1-6</sub> alkoxy, (9) C<sub>6-14</sub> aryloxy, (10) C<sub>1-6</sub> alkanoyl, (11) C<sub>6-14</sub> aryl-carbonyl, (12) C<sub>1-6</sub> alkanoyloxy, (13) C<sub>6-14</sub> aryl-carbonyloxy, (14)
- 20 carboxyl, (15) C<sub>1-6</sub> alkoxy-carbonyl, (16) carbamoyl, (17) N-mono-C<sub>1-4</sub> alkylcarbamoyl, (18) N,N-di-C<sub>1-4</sub> alkylcarbamoyl, (19) 3- to 6-membered cyclic aminocarbonyl, (20) halogen, (21) mono-, di- or tri-halogeno-C<sub>1-4</sub> alkyl, (22) oxo, (23)
- 25 amidino, (24) imino, (25) amino, (26) mono- or di-C<sub>1-4</sub> alkylamino, (27) 3- to 6-membered cyclic amino, (28) C<sub>1-6</sub> alkanoylamino, (29) benzamido, (30) carbamoylamino, (31) N-C<sub>1-4</sub> alkylcarbamoylamino, (32) N,N-di-C<sub>1-4</sub>
- 30 alkylcarbamoylamino, (33) C<sub>1-3</sub> alkylenedioxy,

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(34) -B(OH)<sub>2</sub>, (35) hydroxy, (36) epoxy, (37) nitro, (38) cyano, (39) mercapto, (40) sulfo, (41) sulfinio, (42) phosphono, (43) sulfamoyl, (44) C<sub>1-6</sub> alkylsulfamoyl, (45) di-C<sub>1-6</sub> alkylsulfamoyl, (46) C<sub>1-6</sub> alkylthio, (47) phenylthio, (48) C<sub>1-6</sub> alkylsulfinyl, (49) phenylsulfinyl, (50) C<sub>1-6</sub> alkylsulfonyl and (51) phenylsulfonyl; and

"substituent(s)" for the "cyclic amino group which may be substituted" is selected from 1 to 3 of C<sub>1-6</sub> alkyl, C<sub>6-14</sub> aryl, phenyl-C<sub>1-4</sub> alkyl, benzhydryl, C<sub>1-6</sub> alkyl-carbonyl, C<sub>6-14</sub> aryl-carbonyl and C<sub>1-6</sub> alkoxy-carbonyl.

3. A compound of claim 1 or a salt thereof, wherein A is a nitrogen atom.

4. A compound of claim 1 or a salt thereof, wherein B is a nitrogen atom.

5. A compound of claim 1 or a salt thereof, wherein D is a nitrogen atom.

6. A compound of claim 1 or a salt thereof, wherein m is 1.

7. A compound of claim 1 or a salt thereof, wherein R<sup>1</sup> is (1) a C<sub>1-15</sub> alkyl group which may be substituted, (2) a C<sub>3-10</sub> cycloalkyl group which may be substituted, (3) a C<sub>2-10</sub> alkenyl group which may be substituted, (4) a C<sub>2-10</sub> alkynyl group which may be substituted, (5) a C<sub>3-10</sub> cycloalkenyl group which may be substituted, (6) a C<sub>6-14</sub> aryl group which may be substituted, (7) a C<sub>7-20</sub> aralkyl group which may be substituted, (8) a C<sub>1-20</sub> acyl group which may be substituted, (9) a nitro group, (10) a group of the

formula:  $-NR^{10}R^{11}$  wherein  $R^{10}$  is hydrogen, a  $C_{1-10}$  hydrocarbon group which may be substituted, a  $C_{1-20}$  acyl group which may be substituted, a hydroxy group which may be substituted, a heterocyclic group which may be substituted or a group of the formula:  $-S(O)_t-R^{12}$  wherein t is an integer from 0 to 2, and  $R^{12}$  is hydrogen or a  $C_{1-10}$  hydrocarbon group which may be substituted;  $R^{11}$  is hydrogen or a  $C_{1-10}$  hydrocarbon group; or  $R^{10}$  and  $R^{11}$  form, taken together with the adjacent nitrogen atom, a cyclic amino group which may be substituted, or (11) a group of the formula:  $-O-R^{13}$  wherein  $R^{13}$  is hydrogen, a  $C_{1-10}$  hydrocarbon group which may be substituted, a  $C_{1-20}$  acyl group which may be substituted, a  $C_{1-20}$  alkylsulfonyl group which may be substituted, a  $C_{6-14}$  arylsulfonyl group which may be substituted, or a heterocyclic group which may be substituted; and  $R^2$  and  $R^3$  each is hydrogen.

8. A compound of claim 1 or a salt thereof, wherein  $R^2$  and  $R^3$  each is hydrogen.

9. A compound of claim 8 or a salt thereof, wherein the position of  $R^1$  is para-position.

10. A compound of claim 1 or a salt thereof, wherein  $R^1$  is (1) an amino group which may be substituted by (i) carbamoyl which may be substituted by  $C_{1-6}$  alkyl or  $C_{1-6}$  alkoxy, or (ii)  $C_{1-6}$  alkyl-carbonyl, or (2) a  $C_{1-6}$  alkoxy group which may be substituted by  $C_{3-6}$  cycloalkyl.

11. A compound of claim 1 or a salt thereof, wherein  $R^4$  is a  $C_{1-15}$  alkyl group which may be substituted, a  $C_{3-10}$  cycloalkyl group which may be

substituted, a C<sub>2-10</sub> alkenyl group which may be substituted, a C<sub>2-10</sub> alkynyl group which may be substituted, a C<sub>3-10</sub> cycloalkenyl group which may be substituted, a C<sub>6-14</sub> aryl group which may be substituted  
5 or a C<sub>7-20</sub> aralkyl group which may be substituted.

12. A compound of claim 1 or a salt thereof, wherein R<sup>4</sup> is a C<sub>1-6</sub> alkyl group which may be substituted.

13. A compound of claim 1 or a salt thereof, wherein R<sup>4</sup> is a C<sub>1-6</sub> alkyl group which may be substituted  
10 by halogen, hydroxy which may be substituted or amino which may be substituted.

14. A compound of claim 1 or a salt thereof, wherein R<sup>4</sup> is a group of the formula:  $-(CH_2)_n-NR^{10}R^{11}$   
15 wherein n is an integer from 1 to 3; R<sup>10</sup> is hydrogen, a C<sub>1-10</sub> hydrocarbon group which may be substituted, a C<sub>1-20</sub> acyl group which may be substituted, a hydroxy group which may be substituted, a heterocyclic group which may be substituted, or a group of the formula:  $-S(O)_t-R^{12}$   
20 wherein t is an integer from 0 to 2, and R<sup>12</sup> is hydrogen or a C<sub>1-10</sub> hydrocarbon group which may be substituted; and R<sup>11</sup> is hydrogen or a C<sub>1-10</sub> hydrocarbon group; or R<sup>10</sup> and R<sup>11</sup> form, taken together with the adjacent nitrogen atom, a cyclic amino group which may be substituted.

15. A compound of claim 1 or a salt thereof,  
25 wherein R<sup>4</sup> is a N-C<sub>1-6</sub> alkyl-N-benzylaminomethyl group.

16. A compound of claim 1 or a salt thereof, wherein R<sup>5</sup> is hydrogen, halogen, a C<sub>1-15</sub> alkyl group which may be substituted, a C<sub>3-10</sub> cycloalkyl group which may be substituted, a C<sub>2-10</sub> alkenyl group which may be  
30 substituted, a C<sub>2-10</sub> alkynyl group which may be

substituted, a C<sub>3-10</sub> cycloalkenyl group which may be substituted, a C<sub>6-14</sub> aryl group which may be substituted, a C<sub>7-20</sub> aralkyl group which may be substituted, a C<sub>1-20</sub> acyl group which may be substituted, a carboxy group  
5 which may be esterified or amidated, or a group of the formula: -O-R<sup>13</sup> wherein R<sup>13</sup> is hydrogen or a C<sub>1-15</sub> alkyl group which may be substituted, a C<sub>3-10</sub> cycloalkyl group which may be substituted, a C<sub>2-10</sub> alkenyl group which may be substituted, a C<sub>2-10</sub> alkynyl group which may be substituted, a C<sub>3-10</sub> cycloalkenyl group which may be substituted,  
10 substituted, a C<sub>6-14</sub> aryl group which may be substituted, a C<sub>7-20</sub> aralkyl group which may be substituted, a C<sub>1-20</sub> acyl group which may be substituted, a C<sub>1-20</sub> alkylsulfonyl group which may be substituted, a C<sub>6-14</sub> arylsulfonyl group which may be substituted or a  
15 heterocyclic group which may be substituted.

17. A compound of claim 1 or a salt thereof, wherein R<sup>5</sup> is (1) a C<sub>1-6</sub> alkoxy-carbonyl group, (2) a C<sub>6-10</sub> aryl group which may be substituted by halogen or C<sub>1-6</sub> alkoxy, or (3) a phenyl-C<sub>1-3</sub> alkyl group.  
20

18. A compound of claim 1 or a salt thereof, wherein R<sup>6</sup> is hydrogen, a C<sub>1-15</sub> alkyl group which may be substituted, a C<sub>3-10</sub> cycloalkyl group which may be substituted, a C<sub>2-10</sub> alkenyl group which may be substituted, a C<sub>2-10</sub> alkynyl group which may be substituted, a C<sub>3-10</sub> cycloalkenyl group which may be substituted, a C<sub>6-14</sub> aryl group which may be substituted or a C<sub>7-20</sub> aralkyl group which may be substituted.  
25

19. A compound of claim 1 or a salt thereof, wherein R<sup>6</sup> is hydrogen or a C<sub>1-6</sub> alkyl group.  
30

R<sup>5</sup> is (1) a C<sub>1-6</sub> alkoxy-carbonyl group, (2) a C<sub>6-10</sub> aryl group which may be substituted by halogen or C<sub>1-6</sub> alkoxy, or (3) a phenyl-C<sub>1-3</sub> alkyl group; and

R<sup>6</sup> is hydrogen.

- 5           27. A compound of claim 25 or a salt thereof,  
wherein R<sup>1</sup> is (1) a nitro group,  
(2) an amino group which may be substituted by 1  
or 2 substituents selected from the group  
consisting of (i) C<sub>1-6</sub> alkyl which may be  
10 substituted by hydroxy, (ii) C<sub>1-6</sub> alkyl-carbonyl  
which may be substituted by hydroxy, halogen or  
thienyl, (iii) C<sub>6-10</sub> aryl-carbonyl which may be  
substituted by C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy or halogen,  
(iv) C<sub>3-6</sub> cycloalkyl-carbonyl, (v) C<sub>2-4</sub> alkenyl-  
15 carbonyl, (vi) C<sub>1-6</sub> alkoxy-carbonyl, (vii) C<sub>1-6</sub>  
alkylamino-carbonyl, (viii) C<sub>1-6</sub> alkoxyamino-  
carbonyl, (ix) phenylaminocarbonyl, (x) an  
isoxazolylcarbonyl, thienylcarbonyl,  
thiazolylcarbonyl, pyrazolylcarbonyl or  
20 furylcarbonyl group which may be substituted by 1  
or 2 substituents selected from the group  
consisting of C<sub>1-6</sub> alkyl, nitro and C<sub>1-6</sub> alkoxy,  
(xi) pyridylcarbonyl, (xii) C<sub>1-6</sub> alkylsulfonyl,  
(xiii) thienylsulfonyl and (xiv) phenylsulfonyl  
25 which may be substituted by C<sub>1-6</sub> alkyl,  
(3) a pyrrolyl group or  
(4) a hydroxy group which may be substituted by  
C<sub>1-6</sub> alkyl, C<sub>3-6</sub> cycloalkyl-C<sub>1-3</sub> alkyl or C<sub>1-6</sub>  
alkyl-carbonyl;  
30 R<sup>4</sup> is a C<sub>1-6</sub> alkyl group which may be substituted

by 1 or 2 substituents selected from the group consisting of (1) halogen, (2) hydroxy and (3) amino which may be substituted by 1 or 2 substituents selected from the group consisting of C<sub>1-6</sub> alkyl, phenyl-C<sub>1-3</sub> alkyl and di-C<sub>1-6</sub> alkylamino-C<sub>1-3</sub> alkyl;

R<sup>5</sup> is (1) halogen, (2) a phenyl group which may be substituted by halogen or C<sub>1-6</sub> alkyl, or (3) a carbonyl group substituted by (i) C<sub>1-6</sub> alkyl, (ii) amino substituted by C<sub>1-6</sub> alkyl and C<sub>1-6</sub> alkoxy or (iii) C<sub>1-6</sub> alkoxy; and R<sup>6</sup> is hydrogen or a C<sub>1-3</sub> alkyl group.

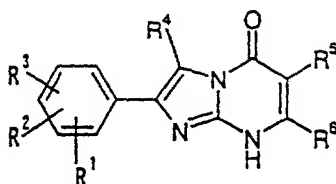
28. 8-(2,6-Difluorobenzyl)-5,8-dihydro-2-[4-(ethylaminocarbonylamino)phenyl]-3-(N-methyl-N-benzylaminomethyl)-5-oxoimidazo[1,2-a]pyrimidine-6-carboxylic acid ethyl ester, 8-(2,6-difluorobenzyl)-5,8-dihydro-2-[4-(methoxyaminocarbonylamino)phenyl]-3-(N-methyl-N-benzylaminomethyl)-5-oxoimidazo[1,2-a]pyrimidine-6-carboxylic acid isopropyl ester, 8-(2,6-difluorobenzyl)-5,8-dihydro-2-[4-(ethylaminocarbonylamino)phenyl]-3-(N-methyl-N-benzylaminomethyl)-5-oxoimidazo[1,2-a]pyrimidine-6-carboxylic acid isopropyl ester, or salts thereof.

29. A process for producing a compound of claim 23 or a salt thereof, which comprises reacting a compound of the formula (iv):

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[illegible]



wherein each symbol is as defined in claim 23, or a salt thereof, with a compound of the formula:  $X^2-(CH_2)_m-R^7$

wherein  $X^2$  is a leaving group; and the other symbols are as defined in claim 23, or a salt thereof.

30. A pharmaceutical composition which comprises a compound of claim 1 or a salt thereof.

31. A composition of claim 30 which is a gonadotropin-releasing hormone antagonist.

32. A composition of claim 30 for preventing and/or treating a sex hormone dependent disease.

33. A composition of claim 30 for preventing and/or treating a sex hormone dependent cancer.

34. A composition of claim 30 for preventing and/or treating prostatic cancer, uterine cancer or breast cancer.

35. A composition of claim 30 for preventing and/or treating prostatic hypertrophy, endometriosis, hysteromyoma or precocious puberty.

36. A composition of claim 30 which is a pregnancy regulator.

37. A composition of claim 30 which is a menstruation cycle regulator.

38. A method for antagonizing gonadotropin-releasing hormone in a mammal in need thereof which comprises administering to said mammal an effective amount of a compound of claim 1 or a salt thereof with a

pharmaceutically acceptable excipient, carrier or diluent.

39. Use of a compound of claim 1 or a salt thereof for manufacturing a pharmaceutical composition for antagonizing gonadotropin-releasing hormone.

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